

*POPULATION HEALTH ACROSS
the LIFE COURSE*



DIVISION *of*
INTRAMURAL POPULATION
HEALTH RESEARCH • NICHD

1967-2017 • 50th ANNIVERSARY

TUESDAY MAY 16, 2017 | 8:00AM - 5:00PM
6710-B ROCKLEDGE DR. | BETHESDA, MD 20817
1ST FLOOR | ROOM 1425/1427



POPULATION HEALTH ACROSS the LIFE COURSE
CELEBRATING 50 YEARS OF POPULATION HEALTH
RESEARCH DISCOVERIES AT NICHD

In 1967, the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development added population health to the mission of its Intramural Research Program. Its objective was to conduct high-risk, innovative research on maternal and child health and develop novel methods for addressing pressing research questions in the substantive areas within the mission of the Institute. Today, this program is called the Division of Intramural Population Health Research (DIPHR).

The 50th anniversary program, titled “*Population Health Across the Life Course*,” will celebrate DIPHR’s contributions to the field of population health. Invited speakers, leaders in the fields of reproduction, pregnancy, child and adolescent development, and statistical methods, will discuss critical and sensitive windows of human exposure and their effects on children and future generations. The program also will include talks on emerging and novel methods for measuring exposures during these windows, and multi-level data needed to address knowledge gaps.

SCHEDULE of EVENTS

POPULATION HEALTH ACROSS the LIFE COURSE

MONDAY, MAY 15, 2017 | DINNER

	Celebrate DIPHR's history and reflect on accomplishments
6:30 – 6:50 PM	Michael M. Gottesman, M.D., <i>Deputy Director for Intramural Research, NIH</i>
6:50 – 7:10 PM	Catherine Y. Spong, M.D., <i>Deputy Director, NICHD</i>
7:10 – 7:20 PM	Constantine A. Stratakis, M.D., D(Med)Sc, <i>Scientific Director, NICHD</i>
7:20 – 7:40 PM	Germaine M. Buck Louis, Ph.D., M.S., <i>Director, DIPHR, NICHD</i>

TUESDAY, MAY 16, 2017 | SCIENTIFIC PROGRAM

8:00 – 8:50 AM	Gather / Coffee
8:50 – 9:00 AM	Welcome and Introduction to the 50th Anniversary of DIPHR Stephen Gilman, Chair of the Scientific Program Committee
9:00 – 10:00 AM	Session 1: Human Reproduction and Population Health Moderators: Carrie Nobles and Melissa Smarr Infertility and Later Risk of Chronic Disease: Causal or Unique Stress Test? Michael Eisenberg, <i>Stanford University Medical Center</i> Richard Legro, <i>Penn State Health, Milton S. Hershey Medical Center</i>
10:00 – 12:15 PM	Session 2: Healthy Pregnancy and Long – Term Consequences for Mothers and Offspring Moderators: Rose Radin, Shristi Rawal, and Alaina Bever Role of Fetal Sex in Pregnancy Complications and Outcomes Daniel Enquobahrie, <i>University of Washington School of Public Health</i> Harnessing New Methods for Understanding and Employing Pregnancy as a Critical Window for Children's Health Mary Kimmel, <i>University of North Carolina School of Medicine</i>
10:50-11:05 AM	Break Do C-Sections Protect Very Premature Babies? Aporetic Conclusions when Testing the Validity of an Instrumental Variable Dylan Small, <i>The Wharton School, University of Pennsylvania</i> Women's Reproductive Health and HIV, From Exposures to Interventions Daniel Westriech, <i>University of North Carolina Gillings School of Global Public Health</i> General Discussion

SCHEDULE of EVENTS

12:15 – 1:30 PM	Lunch
1:30 – 3:05 PM	<p>Session 3: Childhood Origins of Population Health Moderators: Griffith Bell and Hyojun Park</p> <p>Starting Early: A Life Course Perspective on Health Disparities Tina Cheng, <i>Johns Hopkins Bloomberg School of Public Health and Johns Hopkins University School of Medicine</i></p> <p>Methodological Challenges in Children’s Environmental Health Brisa Sanchez, <i>University of Michigan School of Public Health</i></p> <p>Middle Childhood Diet and Age at Menarche Eduardo Villamor, <i>University of Michigan School of Public Health</i></p> <p>General Discussion</p>
3:05 – 3:20 PM	Break
3:20 – 4:55 PM	<p>Session 4: Adolescence and Beyond Moderators: Pnina Gershon and Yubo Wang</p> <p>Development of Emotion Regulation Neurobiology: Influences of the Parent Nim Tottenham, <i>Columbia University</i></p> <p>Causal Models for the HIV Care Cascade Joseph Hogan, <i>Brown University</i></p> <p>The Importance of Childhood and Adolescent Behaviors in Long Term Health Outcomes Leslie Lytle, <i>University of North Carolina Gillings School of Global Public Health</i></p> <p>General Discussion</p>
4:55-5:00 PM	Closing Remarks

BIOGRAPHIES of SPEAKERS



TINA L. CHENG, MD, MPH is the Given Foundation Professor of Pediatrics, Director of the Department of Pediatrics for the school of medicine with joint appointment in the Bloomberg School of Public Health and Pediatrician-in-Chief of The Johns Hopkins Hospital. Her clinical work, teaching and research focuses on child, adolescent and family perspectives on improving health and community-integrated models to interrupt the intergenerational cycle of disadvantage. She co-leads the NIH-funded DC Baltimore Research Center on Child Health Disparities which outlined a research action agenda on child health disparities. She led the establishment of two clinical and research innovation centers at Johns Hopkins: Centro SOL: Johns Hopkins Center for Salud/(Health) and Opportunity for Latinos and the Rales Center on the Integration of Health and Education. She was founder of the Generations Clinic in Washington, DC, a teen tot clinic that has been recognized as an evidence-based best practice in reducing rapid repeat pregnancy. An author of over 150 publications, she has led randomized trials of interventions to promote child and family health and resilience.



MICHAEL L. EISENBERG, MD earned his bachelor degree from Rice University and his medical doctorate from Yale School of Medicine. He completed his internship and residency in urology at the University of California, San Francisco and a Male Reproductive Medicine and Microsurgery fellowship at Baylor College of Medicine in Houston, Texas. Dr. Eisenberg serves as an associate editor of *Fertility and Sterility and Andrology*, on the editorial boards of the *Journal of Clinical Endocrinology and Metabolism* and the *Journal of Assisted Reproduction and Genetics*, and as an ad hoc referee for dozens of leading medical journals and has himself authored numerous peer-reviewed articles. He is highly regarded both nationally and internationally and has delivered invited lectures all over the globe. His clinical and research interests seeks to understand the implications of impaired sperm production to a man's health as well as develop methods to create sperm utilizing stem cells.



DANIEL ENQUOBAHRIE, MD, MPH, PhD is an Associate Professor in the Departments of Epidemiology, Health Services, and the Institute of Public Health Genetics, at the University of Washington. He is director of the Center of Excellence in Maternal and Child Health Education, Science, and Training, and, associate director of the Center for Perinatal Studies at the Swedish Medical Center, Seattle, WA. Dr. Enquobahrie received medical training at Addis Ababa University in Ethiopia, and masters and doctoral training in epidemiology at the University of Washington, before completing a post-doctoral training at the Harvard T.H. Chan School of Public Health. Dr. Enquobahrie's research spans perinatal, cardio-metabolic, genetic, and epigenetic epidemiology, with particular focus on pregnancy complications and early life and developmental origins of cardiovascular and metabolic diseases.

BIOGRAPHIES of SPEAKERS



JOSEPH HOGAN, ScD is Carole and Lawrence Sirovich Professor of Public Health and Professor of Biostatistics at Brown. He conducts research on statistical methods for causal inference, missing data, and sensitivity analysis for under-identified models, and has collaborated extensively with researchers in HIV/AIDS for the past 20 years. Most of his current work is focused on HIV in Kenya and sub-Saharan Africa.



MARY KIMMEL, MD is an Assistant Professor and Medical Director of the UNC's Perinatal Psychiatry Inpatient Unit (PPIU) with clinical expertise in treating women's mood and anxiety disorders and in treating psychiatric disorders and other mental health issues during pregnancy and the postpartum time period. As part of her work on the PPIU, Dr. Kimmel provides care to many who have had treatment resistant postpartum depression or postpartum psychosis. She has published work on the risk factors for postpartum depression and on the care of perinatal patients in a variety of settings. Dr. Kimmel's research interests include studying changes of systems such as the microbiota-gut-brain axis, the stress system and the immune system across pregnancy in relation to the development of maternal depression and anxiety and in relation to the child's psychological development in order to improve and develop treatments. Dr. Kimmel has NIMH and foundation funding to study the microbiota-gut-brain axis in relation to stress reactivity and the development of postpartum depression and anxiety and to study the maternal microbial composition in relation to the child's microbial composition and the child's stress reactivity.



RICHARD S. LEGRO, MD is Professor and Vice Chair of Research in the Department of Obstetrics and Gynecology at Penn State University College of Medicine in Hershey, PA and Co-Director of the Hub Resource Capacity Core at the Penn State Clinical and Translational Science Institute. His research and clinical practice are primarily focused on polycystic ovary syndrome (PCOS)-diagnosis, treatment, and genetic/environmental causes as well as on improving infertility diagnosis and treatment. He has led multiple multi-center trials, has been the principal investigator on a number of National Institutes of Health (NIH) grants and published over 200 peer-reviewed articles in medical journals. He is Secretary-Treasurer of the Endocrine Society. He is an Associate Editor for Fertility and Sterility and Human Reproduction Update and the Co-Editor in Chief of Seminars in Reproductive Medicine.

BIOGRAPHIES of SPEAKERS



LESLIE LYTLE, PhD, is department chair and professor of Health Behavior and professor of Nutrition at the Gillings School of Global Public Health, University of North Carolina at Chapel Hill. Dr. Lytle received a B.S. in Medical Dietetics from Pennsylvania State University and a master's in Education from Purdue University. Her doctoral degree in Health Behavior and Health Education is from the University of Michigan. Prior to joining UNC, she was on the faculty of the Division of Epidemiology and Community Health in the University of Minnesota's School of Public Health for more than 20 years. Dr. Lytle's research focuses on the health promotion of youth and young adults, particularly preventing obesity and promoting healthful diet and physical activity through school, family, and environmental approaches. She has been the principal investigator on several large National Institutes of Health (NIH) studies, including CATCH (NHLBI), TEENS (NCI), TAAG (NHLBI), IDEA (NCI), ECHO (NHLBI) and CHOICES (NHLBI) and has served on many expert panels for the NIH and the Centers for Disease Control and Prevention. Dr. Lytle has taught courses in theories of health behavior change, community nutrition interventions, and behavioral and social aspects of health and currently teaches a doctoral seminar on the development and evaluation of health promotion and disease prevention interventions.



BRISA N. SÁNCHEZ, PhD is an Associate Professor of Biostatistics. She conducts methodological research to synthesize measures of environmental exposures (e.g., social, pollutants, and built environment) and assess their health effects. Some of the methodology includes robust latent variable models, study design for novel data structures. Her collaborative research involves health disparities and child development.



DYLAN SMALL, PhD is a statistician specializing in causal inference, observational studies and applications to the health sciences. Dr. Small obtained his Ph.D. from Stanford and is a professor in the Department of Statistics of the Wharton School of the University of Pennsylvania. He is the co-director of the Center for the Causal Inference at the University of Pennsylvania and the founding editor of the journal *Observational Studies*.

BIOGRAPHIES of SPEAKERS



NIM TOTTENHAM, PhD is an associate professor of Psychology at Columbia University and director of the Developmental Affective Neuroscience Laboratory. Her research examines the development of the neurobiology associated with mature emotional behavior in humans. Her research has highlighted fundamental changes in amygdala-prefrontal cortex circuitry across childhood and adolescence and the powerful role that early experiences, such as caregiving and stress, have on the developmental trajectories of these circuits. Her research uses fMRI, behavioral, and physiological methods to examine human limbic-cortical development in children and adolescents as well as their parents. She has authored over 70 journal articles and book chapters. She is a frequent lecturer both nationally and internationally on human brain development and emotional development. She provides service to numerous scientific communities including the International Society for Developmental Psychobiology, Society for Social Neuroscience, Society for Research in Child Development, and the Flux Congress. She is a recipient of the National Institute of Mental Health Biobehavioral Research Awards for Innovative New Scientists (BRAINS) Award, the American Psychological Association's Distinguished Scientific Award for Early Career Contribution to Psychology, and the Developmental Science Early Career Researcher Prize.



EDUARDO VILLAMOR, MD, MPH, PhD is Professor of Epidemiology at the University of Michigan School of Public Health. His research interests span a wide range of topics at the intersection of pediatric, perinatal, nutritional, and infectious diseases epidemiology; including studies of nutrition in child growth and development, early-life risk factors for chronic disease, and the interactions between nutrition and infection. Villamor received a medical degree from the National University of Colombia, a Master of Public Health from the Hebrew University of Jerusalem, Israel, and a doctorate in nutrition and epidemiology from Harvard. He has lived and conducted epidemiologic research in the Middle East, Africa, and Latin America. He currently serves as director of the Fogarty/LIFESPAN training program Multilevel & Lifecourse Approaches to NCD Prevention in Latin America at the University of Michigan. He is Deputy Editor of the journal Public Health Nutrition.



DANIEL WESTREICH, PhD is an Associate Professor (tenured) of Epidemiology at UNC-Chapel Hill. He received an undergraduate degree in computer science at Yale University, and (after a stint as a software engineer at Microsoft) his MSPH and PhD in Epidemiology at UNC-Chapel Hill. He is funded primarily by an NIH New Innovator (DP2) award, to develop epidemiologic methods for implementation science; previously, he was PI of a K99/R00 from NICHD to examine the impact of pregnancy on response to antiretroviral therapy among HIV-positive women in South Africa.

POPULATION HEALTH DISCOVERIES BY DIPHR INVESTIGATORS 1967 - 2017

* Restricted to studies whose protocols were designed and implemented by Division investigators.
Excludes surveys and research involving only the analysis of existing data or use of biospecimens.

SUCCESSIVE SMALL-FOR-GESTATIONAL AGE (SGA) BIRTH STUDY - COHORT

Howard Hoffman (1988)

Successive small for gestational age (SGA) births were associated with lower SES and maternal smoking while non-repeat SGA births were more likely associated with pregnancy complications. Infants born SGA had lower IQs at 5 years of age.

DIABETES IN EARLY PREGNANCY STUDY - COHORT

James Mills (1988)

This was the first prospective study to demonstrate that poor diabetic control increased the rates of pregnancy loss and malformations.

FOLATE & NEURAL TUBE DEFECTS - CASE CONTROL STUDY

James Mills (1989)

Obesity was associated with neural tube defects.

TRANS-GENERATION STUDY OF PREGNANCY OUTCOMES IN DENMARK - COHORT

Mark Klebanoff (1989)

Women born SGA were found to have twice the risk of having an SGA infant (also hypertension during pregnancy) in comparison to women not born SGA. No association was observed for women born preterm with respect to having a preterm infant in comparison to women born term.

MISSOURI MATERNAL AND INFANT HEALTH SURVEY - COHORT

Howard Hoffman (1990)

This study supported the need for developmental follow-up of non-disabled very low birth weight children because of significantly elevated risk for delay among apparently normal infants.

VAGINAL INFECTIONS & PREMATURITY STUDY - COHORT

Mark Klebanoff (1991)

Bacterial vaginosis is a risk factor for preterm delivery of low-birth-weight infants.

TRANS-GENERATIONAL STUDY OF PREGNANCY OUTCOMES IN PHILADELPHIA & PROVIDENCE - COHORT

Mark Klebanoff (1991)

Women's own history of small-for-gestational (SGA) age and that of her older children predicted SGA status of the youngest child.

NICHD COLLABORATIVE EPIDEMIOLOGICAL SIDS STUDY & THE SIDS PATHOLOGY ATLAS - CASE CONTROL

Howard Hoffman (1992)

'Apnea of Prematurity' and DTP immunization were not risk factors for SIDS, though other risks were found.

FETAL ALCOHOL SYNDROME IN CHILE - COHORT

James Mills (1992)

Study found that the risk for intellectual disability without obvious signs of fetal alcohol syndrome was high, and discovered that peripheral neuropathy was part of alcohol exposure.

NICHD HEALTH RESEARCH BOARD IRELAND NEURAL TUBE DEFECTS (NTD) STUDY - CASE CONTROL

James Mills (1992)

The folate pathway involving methylation and MTHFR were found to be important for neural tube defects.

CALCIUM SUPPLEMENTATION IN PREGNANCY TO PREVENT PREECLAMPSIA - RANDOMIZED CLINICAL TRIAL

Richard Levine (1996)

This definitive trial demonstrated that calcium supplementation did not prevent preeclampsia, and it provided the first evidence about the importance of biomarkers such as VEGF and other angiogenic factors for disease onset.

**LACK OF AGE APPROPRIATE IMMUNIZATION
FOR INNER CITY INFANTS STUDY - COHORT**

John Clemens (1998)

Immunization rates were low at 7 months, and associated with maternal employment.

**DETERMINANTS OF BREAST FEEDING
STUDY - COHORT**

Bruce Simons-Morton (1998)

Study found that 53% of inner city mothers initiated breastfeeding. Predictors were being foreign-born, younger age, positive attitude, and infants born of higher weight. Prone (unsafe) sleep position for the infant was associated with poverty, black race, grandmother in home, and seeing infant prone while in hospital.

**EPIDEMIOLOGICAL STUDIES OF IMMUNOLOGICAL
AND ANTIBIOTIC PREVENTION OF EARLY-ONSET
GROUP B STREPTOCOCCAL (GBS) DISEASE OF
THE NEWBORN - COHORT**

John Clemens; Ruth Brenner;

Feng-Yin (Kimi) Lin (1999)

Intrapartum antibiotic prophylaxis was effective for interrupting mother-to-newborn GBS transmission. Mother-to-newborn transmission of GBS was 2.6% among elective Cesarean deliveries

**PREVENTING PROBLEM BEHAVIOR AMONG
MIDDLE SCHOOL STUDENTS - GOING PLACES
STUDY - GROUP RANDOMIZED TRIAL**

Bruce Simons-Morton (2000)

School-based interventions were successful in lowering progression in smoking rates.

**DURATION OF LABOR AND CESAREAN DELIVERY
IN ASSOCIATION WITH EPIDURAL ANALGESIA IN
NULLIPARA - RECORD LINKAGE STUDY**

Jun Zhang (2000)

Epidural analgesia during labor was not associated with an increased risk of Cesarean delivery, oxytocin use or instrumental delivery resulting from dystocia.

VAGINAL FLORA STUDY - COHORT

Mark Klebanoff (2003)

Total fat and energy intake were positively associated with bacterial vaginosis, while folate, vitamin E and calcium intake were inversely associated.

**RANDOMIZED CLINICAL TRIAL ON MANAGEMENT
OF EARLY PREGNANCY FAILURE (MEPF) -
RANDOMIZED INTERVENTIONAL CLINICAL TRIAL**

Jun Zhang (2005)
800 µg of misoprostol vaginally was found to be efficacious, safe and acceptable treatment for the medical management of miscarriage, having an 84 percent success rate.

**YOUNG DRIVERS INTERVENTION STUDY -
RANDOMIZED TRIAL**

Bruce Simons-Morton (2006)

Parent-teen intervention resulted in fewer traffic violations and less risky driving after 12 months.

**PREVENTION OF CHILDHOOD INJURIES
IN THE DISTRICT OF COLUMBIA**

Ruth Brenner (2007)

Adolescent abuse occurred more often in girls than boys, with mothers being the most common perpetrators.

BIOCYCLE STUDY - COHORT

Enrique Schisterman (2008)

Metabolic markers of oxidative stress, lipoprotein cholesterol, inflammation, glucose tolerance and uric acid were shown to vary significantly across the menstrual cycle among healthy, regularly cycling women. Findings underscore the importance of timing blood collection to the timing of women's cycles for clinical management.

**STEPPIN' UP: POSITIVE YOUTH DEVELOPMENT
PROGRAM - GROUP RANDOMIZED TRIAL**

Bruce Simons-Morton (2009)

No intervention effects were found for violence, fighting or bullying.

SWIMMING LESSONS AND RISK OF DROWNING - CASE CONTROL

Ruth Brenner (2009)

An 88% reduction in the odds of drowning was associated with childhood swim lessons.

LONGITUDINAL INVESTIGATION OF FERTILITY AND THE ENVIRONMENT (LIFE) STUDY - COHORT

Germaine Buck Louis (2009)

Various endocrine disrupting chemicals were associated with diminished fecundity requiring a longer time for couples to become pregnant. Male partners' exposures were more frequently associated with diminished fecundity in comparison to female partners.

FAMILY MANAGEMENT OF DIABETES (FMOD) STUDY - RANDOMIZED INTERVENTIONAL TRIAL

Bruce Simons-Morton; Tonja Nansel (2009)

WE-CAN Manage Diabetes, a clinic-integrated behavioral intervention, improved blood glucose control in adolescents with type 1 diabetes – an age during which disease control typically worsens. The program was similarly effective across income levels.

ENDOMETRIOSIS: NATURAL HISTORY, DIAGNOSIS & OUTCOMES (ENDO) STUDY - COHORT STUDY

Germaine Buck Louis (2010)

Various endocrine disrupting chemicals were associated with incident endometriosis, but findings vary by choice of study cohort (clinical or population) and biospecimens (omentum fat, serum & urine).

CONSORTIUM OF SAFE LABOR - ELECTRONIC MEDICAL RECORD STUDY

Jun Zhang; Katherine Grantz & Una Grewal (2010)

New evidence suggests that labor patterns today are longer than those approximately 50 years ago and routine interventions such as the use of oxytocin, as well as modern-day labor process management, warrant reconsideration.

EFFECTS OF LOW DOSE ASPIRIN IN GESTATION AND REPRODUCTION (EAGER) TRIAL - RANDOMIZED INTERVENTIONAL CLINICAL TRIAL

Enrique Schisterman (2012)

In women with a history of pregnancy loss, preconception-initiated low dose aspirin does not prevent subsequent pregnancy loss, but increases the rate of becoming pregnant again, particularly among women with chronic, low-grade inflammation.

NICHD FETAL GROWTH STUDIES - COHORT STUDY

Jun Zhang; Germaine Buck Louis (2013)

Significant differences in longitudinal fetal growth were observed by maternal self-identified race/ethnicity supporting the need for customized standards to avoid misclassification of nonwhite fetuses.

CULTIVATING HEALTHY ENVIRONMENTS IN FAMILIES OF YOUTH WITH TYPE 1 DIABETES (CHEF) STUDY - RANDOMIZED INTERVENTIONAL TRIAL

Tonja Nansel (2013)

The CHEF family-based behavioral nutrition intervention improved diet quality in youth with type 1 diabetes without increasing diet cost.

UPSTATE KIDS STUDY - COHORT

Germaine Buck Louis; Mary Hediger; Edwina Yeung (2014)

Infertility treatment is reliably reported by mothers at 4-months postpartum relative to treatment data, and is not associated with differences in children's growth or development through 3 years of age.

SIMULATED DRIVING STUDIES - RANDOMIZED TRIALS

Bruce Simons-Morton (2016)

In a series of trials evaluating the effect of teen passengers on simulated risky driving, social norms, peer pressure influence, elevated mood, and social exclusion were associated with increased risky driving.

POPULATION HEALTH DISCOVERIES BY DIPHR INVESTIGATORS 1967 - 2017

SUPERVISED PRACTICE DRIVING STUDIES - COHORT

Bruce Simons-Morton (2016)

The amount and quality of parental supervision and practice driving were not associated with novice teen independent driving exposure, distraction, or risky driving.

NEXT GENERATION HEALTH STUDIES - COHORT

Bruce Simons-Morton (2016)

Relative to young adults not attending college, first year college students were less physically active and more likely to (binge) drink and speed while driving,

though reported more family satisfaction and fewer depressive symptoms.

DIABETES & WOMEN'S HEALTH (DWH) STUDY - COHORT

Cuilin Zhang (2016)

Gestational diabetes can serve as an effective vehicle to identify women at high risk for type 2 diabetes, hypertension and cardiovascular diseases later in their lives. Adopting healthful diet and lifestyle factors after the index pregnancy may substantially lower their risks- a hopeful message to women at high risk.

STATISTICAL METHODS DEVELOPED by DIPHR INVESTIGATORS

CALCULATING SAMPLE SIZE

James Schlesselman (1974)

New method for calculating sample sizes for cohort and case-control studies

This was made possible by using Bayesian semiparametric techniques in Dirichlet process mixtures, which also accommodates flexible test score distributions.

SEQUENTIAL METHODOLOGY FOR CLINICAL TRIALS

Aiyi Liu (2004)

New methods for sequential methodology with application to clinical trials and other medical studies.

ANALYSIS OF COMPLEX DIETARY DATA

Aiyi Liu (2012)

Longitudinal data with replicates from episodically consumed foods can be effectively jointly modeled using two-part mixed-effect model and fitted by pair-wise methods. The two-part model also provides adequate power for studies comparing intake of episodically consumed foods.

STATISTICAL MODELING OF HUMAN FECUNDITY

Rajeshwari Sundaram (2009)

Developed flexible models for probability of conception that account for all non-bleeding, intercourse occurring days in a menstrual cycle to contribute to the probability. This allows the data to determine the fertile window in a menstrual cycle rather than a predetermined fixed window.

STATISTICAL METHODS FOR BIOMARKER COMBINATION

Danping Liu (2012)

A novel prediction model framework was developed to combine the information in longitudinal biomarker data for predicting binary events. The model is robust to several types of model misspecifications. This research is applied to the prediction of pregnancy outcomes with the repeated ultrasound measurements.

NEW DEVELOPMENT IN ROC CURVES

Zhen Chen (2009)

A novel approach for incorporating *a priori* constraints into estimations of ROC curves.

STATISTICAL METHODS DEVELOPED by DIPHR INVESTIGATORS

CAUSAL INFERENCE IN REPRODUCTIVE AND PERINATAL EPIDEMIOLOGY

Enrique Schisterman (2012)

Developed methods using causal inference tools, specifically as they improve researchers' understanding of confounding, colliders, collinearity, and overadjustment in the context of reproductive and perinatal epidemiology.

CHEMICAL MIXTURES MODELING

Zhen Chen (2012)

A constructive latent risk-class modeling framework for assessing collective association between a large number of environmental exposures to chemical pollutants and some health outcomes. The framework is also capable of modeling couple based exposures when infertility is of interest.

BIOMARKER/ANALYTICAL DEVELOPMENT

Enrique Schisterman (2014)

Developed analytic methods and study designs focused on improving biomarker utility in epidemiologic studies, including accounting and correcting for measurement error, and pooling designs for statistical and cost efficiency.

ANALYSIS OF MULTIVARIATE SURVIVAL DATA

Rajeshwari Sundaram (2014)

Developed methods to assess the duration of per-centimeter increment in cervical dilation to better assess the first stage of labor using methods that account for intermittent examination of women in labor as well as account for unknown start time.

CURRENTLY in PROGRESS

UNIFORM NATURALISTIC TEENAGE DRIVING STUDIES (UNTDS)-MULTIPLE COHORTS

Bruce Simons-Morton

The UNTDS is based on data from the Strategic Highway Research Program 2 (SHRP2) Naturalistic Driving Study and aims to address critical questions related to risky driving and crash risk across a spectrum of ages.

PREGNANCY EATING ATTITUDES STUDY (PEAS) - COHORT STUDY

Tonja Nansel

PEAS aims to examine the role of food reward sensitivity in maternal diet and weight change during pregnancy and postpartum.

FOLIC ACID AND ZINC SUPPLEMENTATION (FAZST) TRIAL - RANDOMIZED INTERVENTIONAL TRIAL

Enrique Schisterman

FAZST is a multi-center, double-blind, block-randomized, placebo-controlled trial to assess

the effects of folic acid and zinc dietary supplementation in male partners on semen quality, as well pregnancy rates and related outcomes (e.g., miscarriage).

B-WELL-MOM STUDY - COHORT STUDY

Pauline Mendola

The B-WELL-Mom Study aims to increase understanding of factors that predict poor asthma control during pregnancy as well as add to our knowledge of the basic immunology of pregnancy.

IDEAL FERTILITY STUDY - COHORT STUDY

Sunni Mumford

The objective of the IDEAL study is to evaluate the impact of dietary and other modifiable lifestyle factors in female partners on prospectively measured pregnancy outcomes among couples seeking fertility treatment (female partners of FAZST participants) in the context of a couple-based approach across a spectrum of fertility and treatment.

CURRENTLY in PROGRESS

FETAL 3D STUDY – IMAGING STUDY

Katherine Grantz

The overarching research aim of the Fetal 3D Study is to both establish standards for fetal body composition and organ volumes by race/ethnicity and to understand the relationship between gravid diseases and longitudinal changes in fetal body composition (subcutaneous fat, lean mass) and organ measurements (in singletons) over the course of pregnancy.

UPSTATE KIDS CARDIO-METABOLIC FOLLOW-UP STUDY – COHORT STUDY

Edwina Yeung

The Upstate KIDS cohort will be followed to age 8 years with particular focus on childhood cardio-metabolic outcomes (i.e., obesity, high blood pressure, metabolism).

INTERGENERATIONAL HEALTH STUDY – COHORT STUDY

Cuilin Zhang; Edwina Yeung; Sunni Mumford

The overarching goal of this study is to establish a large offspring cohort to investigate the long-term

intergenerational impacts of maternal gestational diabetes and obesity on the metabolic, vascular, and reproductive health of the offspring.

COLLABORATIVE PERINATAL PROJECT (CPP) MORTALITY LINKAGE – RECORD LINKAGE STUDY

Cuilin Zhang; Stephen Gilman

The aim of the CPP Mortality Linkage Study is to link this pregnancy cohort with the National Death Index. The study will investigate the associations between a spectrum of maternal pregnancy-related complications and all-cause and cause-specific mortality. and 2) offspring prenatal, socioeconomic, behavioral, cognitive, and neurologic precursors to suicide.

THE DEVELOPMENTAL ORIGINS OF SUICIDE MORTALITY– RECORD LINKAGE STUDY

Stephen Gilman

To aims of this study are to utilize the CPP Mortality Linkage in the offspring to investigate the prenatal, socioeconomic, behavioral, cognitive, and neurologic precursors to suicide.

POPULATION HEALTH LEADERSHIP AT NICHD

1967

Epidemiology and Biometry Branch
Dr. Samuel Greenhouse, *Chief*

1973

Epidemiology and Biometry Program
Dr. Daniel Seigal, *Director*

1982

Epidemiology Branch
Dr. George Rhoads, *Chief*

1989

Prevention Research Section
Dr. Lois Maiman, *Section Chief*

1991

**Division of Epidemiology, Statistics
and Prevention Research (DESPR)**
Dr. Heinz Berendes, *Director*

**Epidemiology Branch,
Pediatric Epidemiology Section**
Dr. James Mills, *Section Chief*

1999

**Division of Epidemiology, Statistics
and Prevention Research (DESPR)**
Dr. Mark Klebanoff, *Director*

Prevention Research Branch
Dr. Bruce Simons-Morton, *Chief*

2008

Biostatistics and Bioinformatics Branch
Dr. Kai Yu, *Chief*

2010

Epidemiology Branch
Dr. Enrique Schisterman, *Chief*

2015

Health Behavior Branch
Dr. Stephen Gilman, *Acting Chief*

2016

Biostatistics and Bioinformatics Branch
Dr. Aiyi Liu, *Acting Chief*



1962

NICHD established

1970

Epidemiology and Biometry Program
Dr. Samuel Greenhouse, *Director*

1978

Prevention Research Program
Dr. Heinz Berendes, *Director*

1989

**Biometry and Mathematical
Statistics Branch**
Dr. Young Jack Lee, *Chief*

1990

Epidemiology Branch
Dr. John Clemens, *Chief*

1992

Prevention Research Branch
Dr. Lois Maiman, *Chief*

2000

**Biometry and Mathematical
Sciences Branch**
Dr. Kai Yu, *Chief*

Epidemiology Branch
Dr. Germaine Buck, *Chief*

2009

**Division of Epidemiology, Statistics
and Prevention Research (DESPR)**
Dr. Germaine Buck Louis, *Director*

Biostatistics and Bioinformatics Branch
Dr. Paul Albert, *Chief*

2013

**Division of Intramural Population
Health Research (DIPHR)**
Dr. Germaine Buck Louis, *Director*

Health Behavior Branch
Dr. Bruce Simons-Morton, *Chief*



Dr. Una Grewal, DIPHR, NICHD

P: (301) 496-5581 | E: grewalja@mail.nih.gov